ALBERTA WATER COUNCIL

Alberta's Water Management System
POLICY ISSUES AND GAPS

Final Report

Prepared by:
Policy Issues and Gaps Project Team

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Executive Summary

One of the key challenges to implementing *Water for Life: Alberta's Strategy for Sustainability* (*Water for Life*) is aligning policy, legislation and resources. To address this issue, the Alberta Water Council (AWC) created a multi-stakeholder group, the Policy Issues and Gaps Project Team (Project Team) to identify priority policy issues and gaps relating to Alberta's water management system. The Project Team was also charged with identifying a process that could be used in the future to identify and prioritize water management system issues.

An initial list of nearly 120 potential policy issue areas was created based on the *Water for Life* outcomes.

To narrow down such a large list to a manageable set of priority issues, a prioritization assessment approach was adopted. The approach enabled the Project Team to identify those issues that, if addressed, would yield the largest impact in a timely fashion and would also have the highest probability of success.

Through the initial prioritization process and an assessment for potential issue groupings, the list of policy issues was reduced by the Project Team to four priority focus areas ranked in the following order:

a. Watershed planning,
b. Reliable, quality water supply for a sustainable economy,
c. Pollution minimization and source water protection, and
d. Legal framework for water conservation and management to support aquatic ecosystem protection.

The four priority focus areas were further assessed by the Project Team to identify the two areas with the highest rankings for both impact and probability of success and to conduct further review in a workshop for invited Subject Matter Experts (SMEs). SMEs were provincial stakeholders knowledgeable about Alberta's water management system. The two top priority focus areas,

a. Watershed planning, and
b. Reliable, quality supply for a sustainable economy.

were validated by SMEs who also identified means to address them.

The two remaining priority focus areas are essential matters that must be addressed when updating and improving Alberta's current water management system, as all identified priority focus areas are interconnected. They were also ranked as having a medium to high impact but would take longer to accomplish, or would require a

major change in society's expectations, or provincial policy and legislation. As the Project Team was as concerned with process as with product, they chose to work with only the top two focus areas to test the prioritization process itself.

The outcomes of the process reflect the expertise and perspective of the Project Team, resulting in a subjective determination. However, SMEs helped to validate the Project Team's findings. This report provides advice to the AWC concerning the Project Team's work to align policy, legislation and resources in Alberta's water management system.

1 Context and Project Overview

1.1 Background

The Alberta Water Council (AWC) identified four challenges to implementing *Water for Life: Alberta's Strategy for Sustainability (Water for Life)*. One challenge was to align policy, legislation and resources. The AWC supports comprehensive and integrated policies at the provincial and municipal levels of government to support effective water management in Alberta.

To address this commitment, the AWC created a multi-stakeholder group, the Policy Issues and Gaps Project Team (the Project Team) to develop a process for identifying, prioritizing and outlining potential actions to address priority issues and gaps in Alberta's water management system. See Appendix A for the team's terms of reference and members.

1.2 Project Team Activities

The Project Team used both the expertise of its members as well as consultants and provincial Subject Matter Experts (SMEs) on water policy to fulfill the terms of reference and produce the key deliverables.

In the first phase, the Project Team retained a consultant to develop the following background materials:

- An inventory of provincial water management outcomes
- A list of water management policy instruments
- An initial list of policy issues and gaps (*issues and gaps were ultimately grouped as "issues"*).

The expertise of members of the Project Team and SMEs was used by the consultant to ensure that end products reflected current sectoral, academic and scientific knowledge. The SMEs were invited to offer input into the consultant's work through a web portal that posted draft materials and provided a forum to submit comments. It is important to note that the general public was not invited to provide input in this work.

Project Team members used the consultant's deliverables to assist them in focusing on:

- Identifying policy issues and gaps
- Assessing and determining priorities
- Developing approaches to address priority focus areas; and
- Engaging SMEs to inform the final report.

2 Phase 1: Identification of Alberta's Water Management System

The Project Team focused on Alberta's water management system, developed an inventory of provincial water management outcomes and policy instruments, identified an initial list of policy issues and gaps, and established criteria to develop a prioritization process.

2.1 Alberta's Water Management System

2.1.1 Inventory of Provincial Water Management Outcomes

While provincial water management outcomes are found in a variety of government documents, business plans and strategies, *Water for Life* is the primary water management policy framework in Alberta. This framework was used to create the list of provincial water management outcomes. *Water for Life's* high-level outcomes, as well as the sub-components, were included in the water management outcome inventory.

2.1.2 List of Water Management Policy Instruments

An inventory of water management policy instruments was prepared by the consultant in the context of the identified outcomes. The inventory consisted of legislation, agreements, treaties, guidelines and other policy instruments that influence the management and use of water in Alberta. Provincial, federal, First Nations, municipal, international and other policy instruments were identified. A list of existing research, analysis, recommendations and views related to water management in the province was also prepared.

2.2 Identifying Policy Issues and Gaps

Using the *Water for Life* water management outcomes and the identified list of policy instruments as starting points, the consultant team developed a comprehensive list of policy issues that need to be addressed to achieve Alberta's water management outcomes. The list of policy issues was a broad sweep, representing the full spectrum of interests and issues. As such, the list included approximately 120 items ranging from high-level issue development to the identification of specific definitions and sections of certain legislation that need to be addressed. The consultant team did not specifically identify policy issues that are already being addressed by government or AWC, although those projects were noted. The list provided a starting point for the Project Team to identify priorities. The focus was on

appropriate breadth. Engagement of SMEs was critical to capture that breadth.

Relevant issues were identified by addressing further criteria:

- Is the policy or policy instrument compatible with a watershed approach?
- Does the policy or policy instrument promote good practice in water management decisions?
- Is the policy or policy instrument an efficient use of time and resources?
- Is the policy or policy instrument effective (e.g., to meet desired outcomes)?

The consultant team also undertook varying degrees of analysis for each of the identified issues. In addition to some basic analysis, the Project Team identified a set of strategic focus questions to complete a more rigorous assessment. The intent was to identify existing information on the advantages and disadvantages of policy instruments and outstanding issues. SMEs were consulted via the consultant's web site. The focus questions included:

- How are current and future water users and uses protected with existing policy instruments?
- How are water, air, and land use decisions linked by existing policy instruments?
- How does compliance happen with existing policy instruments?
- How does existing policy deal with potential long-term water supply changes?
- How would lower impact development be implemented in an urban and rural municipal context using existing policy instruments?
- To what extent will watershed planning options be enabled or constrained by existing policy instruments?

The consultant's report created a "snapshot in time" list of issues that may have an impact on Alberta's water management system. The list highlighted not only the range of issues, but also the complexities and interconnectedness of issues associated with water management. The following is an illustration of this interconnectedness:

> *The idea that each person is entitled to a certain amount of water for basic necessities of life was raised as an issue through the SME consultation and analysis concerning how current and future users are protected with existing policy instruments.*
>
> *Related to this, a discussion of how low impact development could be implemented in both urban and rural municipal contexts identified a*

> *number of water allocation issues specific to urban and rural development practices. It was identified that regional growth strategies and regional land use planning were necessary strategies to move both water management and good urban planning forward.*
>
> *Water management planning was identified as having a well-articulated legislative framework in the Water Act, while watershed management planning, concerned with the landscapes over which surface water and precipitation drained to a receiving water body, and did not. A great deal of material focused on water as a commodity and market instruments as mechanisms to promote water conservation.*

General issue categories arising from the consultant's final report, in no particular order of priority, included:

- Governance
- Legislation and Decision Making
- Risk Management
- Knowledge and Information Systems
- Resources and Stakeholder Capacity
- Policy Integration
- Adaptive Management
- Cumulative Effects

Many of the issues are cross-cutting and interconnected. From a practical management and review perspective, SMEs noted that there are many issues where work is already underway to address them. Again, the intent was to capture a snapshot of all key policy issues at a particular point in time. The intent of the prioritization process was to further define the list.

2.3 The Prioritization Process

The Project Team adopted a prioritization approach and process. The chosen methodology narrowed the broad list of issues and gaps, and identified priorities that will support future AWC planning and other provincial policy development.

The prioritization approach has been used to support work by the governments of Alberta and British Columbia for harmonizing policy, and in identifying opportunities to enhance the regulatory approach in Alberta's upstream oil and gas sector. The approach hinges on the concept of "biggest bang for the buck." This approach helped the Project Team to identify those issues that if addressed would yield the largest impact in a timely fashion, and have the highest probability of success.

The approach recognizes that some issues may be important, but may not have a significant impact relative to other issues. Alternatively, it may be a key issue with the potential to have a large impact, but the ability to implement measures to address the issue may be limited by resources and funding, or take too long. The Project Team focused on social, economic and environmental impacts and also assessed the probability of success against current societal expectations and the time it would take to educate or transform those expectations. The approach involved applying criteria, assessing priorities and ranking those priorities using a matrix as outlined below.

1. Criteria

The prioritization process included two key criteria:

- Impact (high, medium, low)
    - "Impact" reflected the magnitude of results from the action taken to address the issue. It considered social, environmental and economic implications, and the scope of impact, including sectors affected, timing of results (short, medium, long). Impact considered the broader implications, including potential societal (such as consumer demand shifts) and economic changes. Risk was a key aspect of the impact assessment.

- Probability of Success (high, medium, low)
    - "Probability of success" directly related to the likelihood that positive results would be realized at a level/time/cost desired. This was as much a function of conditions in which actions are taken, as they are about the ability of the individual/group response for implementation to achieve the desired outcomes. This latter part revolves around the idea of a "likelihood to implement" factor, recognizing that a suite of factors influences decisions, such as degree of support, political will, economic, social, and technological barriers.

2. Assessment Approach

It is important to note that the composition of the Project Team membership resulted in a subjective determination of "biggest bang for the buck." It is possible that a different group of people may have come up with a different set of priorities. The Team did not attempt to reach consensus on every issue that was subjected to the process, but focused more on the process itself. Team members conducted an assessment to determine the priority issues that, if addressed, would result in the "biggest bang for the buck," involving the following:

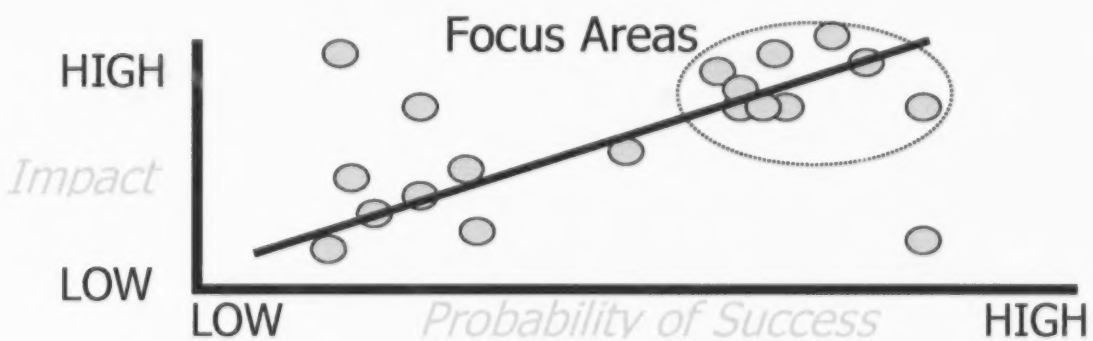
- Ranking each action (high, medium, low) for both impact and probability of success.
- Reaching general agreement among the Project Team members who participated in the activity on each ranking (recognizing that in many instances, it may be a relative determination).[1]

A list of factors was identified as part of the assessment to determine where each of the issues fell within the two criteria. One of the main factors for consideration was the timing of impact/success. Some things were determined to be high impact and high probability of success, but medium to long-term to achieve.

3. Prioritization

Items with a high impact and high probability of success were grouped in a focus area, as shown in Figure 1, and were given the highest priority. Items with a combination of high/medium criteria were grouped and listed next.

Figure 1. Prioritization by Focus Area



An Issues and Gaps Analysis Matrix was developed (described in Phase 2 below) and used for each issue or gap identified. The matrix was used to provide the essential elements and subsequent information for prioritization assessment. The matrix included the focus question, outcome statement, a preliminary analysis, list of associated policy instruments, issue/gap implications, and its connection with other priorities. From the accumulation of this information the SMEs and Project Team were able to conduct a prioritization assessment. Issues relating specifically to the achievement of *Water for Life* were also included in the analysis.

[1] Some members were not in attendance when the ranking was performed, but had opportunities to comment.

3 Phase 2: Determining High Priority Issues

3.1 Initial Priority Issue Focus Areas

Working with the initial issues and gaps list, and with consideration of the inventory of outcomes and policy instruments, the following issues were identified as the top ten priority issue focus areas for further consideration. They are listed in Table 1 in no particular order of preference or priority.

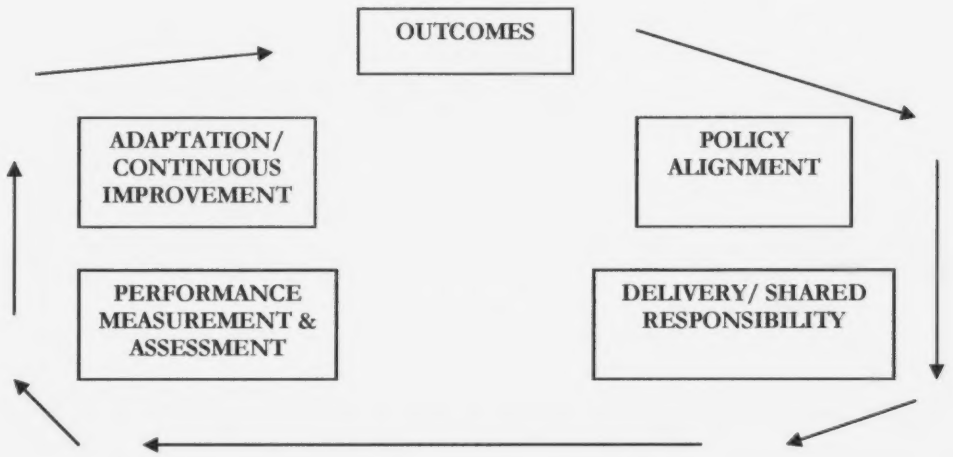
Table 1. Top Ten Priority Issue Focus Areas

Initial Priority Issue Areas	Key Elements
Empowerment of municipalities	▪ Ensuring capacity for the tactical implementation by municipalities of best practices to manage and conserve watersheds. ▪ Empower municipalities to manage and conserve water resources consistently within their mandate and those of the province.
Promoting integration of land, water and eventually air policies	▪ Policy development that fundamentally recognizes the interconnectivity between land policy and water policy as we move towards watershed management – that incorporates both land and water (and ultimately air).
Joint management of surface and groundwater	▪ Surface water and groundwater are interconnected and new policy needs to recognize this as the science and understanding of the relationship between surface water and subsurface water develops. ▪ This is a sub-set of promoting the integration of land, water and eventually air.
Watershed governance	▪ Clarifying governance levels and mandates at various provincial, regional, municipal scales. ▪ Consider First Nations perspectives including water ownership. ▪ Clarify responsibilities of users.
Legal framework for water conservation and management to support aquatic ecosystem protection	▪ Address the variety of disparate tools that exist which are aimed at aquatic ecosystem protection. ▪ Recognize there are questions about the efficacy, legal enforceability and implementation strategy for these tools and whether they will result in protection for the aquatic environment. ▪ Within the new watershed governance and policy structures, develop the legal framework for protection and management of watersheds.
Perspectives, strategies and priorities for long-term water supply	▪ Greater (and more coordinated, broader interest-based) research, scenario planning and analysis of the implications and risks to future water supplies as they relate to the three priorities identified in *Water for Life*.
Watershed planning	▪ A mechanism to coordinate use, conservation and the cumulative effects on watersheds at appropriate scales. ▪ Watershed plans would connect to land use plans.
Market mechanisms and economic instruments	▪ Financial tools and instruments to encourage and promote efficient use and management of watersheds and water resources (encourage innovation, provide greater flexibility, etc.)
Reliable, Quality Water Supply for a Sustainable Economy	▪ A sustainable economy depends on knowing what level of quality and quantity of water supplies is considered acceptable/desirable. ▪ Much of the current focus is on efficient water use – outcomes and management frameworks should also give consideration to effectiveness of water use. ▪ Communities also have a role in providing leadership and management to ensure reliable, quality water supplies for a sustainable economy. The role of communities in providing leadership and management has not been specified.
Pollution minimization and source water protection	▪ The current policy framework around pollution minimization focuses on regulating point sources of pollution and monitoring and responding to acute impacts from these point sources. ▪ A more effective framework must also address systemic and cumulative impacts, non-point source impacts and must have regulatory flexibility to respond to degradation of water quality and related impacts on human and environmental health.

3.2 Project Team Prioritization Process and Assessment

To the extent possible, each of the ten priority policy issue/gap statements was subjected to review using the Alberta Water Management System Model, as shown in Figure 2.

Figure 2. Systems Approach



Supporting matrices based on the systems approach were developed for each of the ten priority items to guide further analysis and assessment of the issues.

The sections below summarize the key elements of the analysis undertaken by the Project Team (An example of the matrix for *Empowerment of Municipalities* can be found in Appendix B). Through this analysis it was determined that some of the issues were subsets of other issues identified. As such, for some of these issues, a rigorous assessment was not undertaken (left to the assessment of the larger issue).

It is important to note that the assessment recognized that all of the issues were essentially priority areas. The focus of the additional assessment was to identify, on a relative basis, those issues that could be most effectively addressed in the short to medium-term.

3.2.1 Empowerment of Municipalities

The matrix provided a preliminary analysis of municipal responsibilities related to impacts on water resources as a result of urban development and growth in various sectors.

Associated policy instruments were identified, issue/gap implications were discussed, and the connection with other priorities were reviewed identifying whom the issue affected and who would address it (provincial/municipal governments, WPACs and WSGs). Obvious connections with other priorities were identified (watershed governance, watershed planning, pollution minimization, source water protection and interaction between land, air and water, drinking water standards).

The decision was made to include the elements of this issue in Watershed Management as municipalities are one identified sector who are directly involved in AWC's work on watershed planning and shared governance.

3.2.2 Promoting Integration of Water, Air, and Land Management

Preliminary analysis identified the importance of coordination among the *Water for Life Strategy*, the *Land Use Framework* and the Clean Air Strategic Alliance. Identified was the need for cooperation and collaboration at the planning level by all departments involved in natural resource management. Working examples of difficulties that arise because there is no integration were reviewed. Issue/gap implications were clearly identified with potential options and considerations noted and discussed. Connection with other priorities included joint management of surface and groundwater and watershed planning.

The decision was made to include the elements of this issue in Watershed Management because integration of water, air and land management will take place at the regional or watershed level.

3.2.3 Joint Management of Surface and Groundwater

In Alberta, groundwater is managed separately from surface water unless there is a proven hydraulic connection between the groundwater supply and a surface water body. Only one internal departmental policy document was identified. There is limited scientific information for evaluating how groundwater diversion and allocation is administered. Extensive scientific knowledge outside of Alberta on groundwater and surface water interaction led the Project Team to infer that such connection occurs in Alberta. A potential option, at this time, is to manage groundwater with

surface water on a watershed basis. The decision was made to include this issue in reliable, quality water supply.

3.2.4 Watershed Governance (to accompany First Nations water rights)

Alberta Environment's principles and criteria for public involvement are set out in *Enabling Partnerships: A Framework in Support of Water for Life: Alberta's Strategy for Sustainability and Public and Stakeholder Involvement Principles*. A number of advantages and disadvantages of public involvement and participation in watershed governance were discussed. It is unclear where the "public" ends and the "stakeholder" begins. It is unclear how shared governance will be able to reduce regulatory activity or how regulatory activity could change. Connections with other priorities include Empowering Municipalities and Watershed Planning. Thus the decision was made to include this issue focus area in Watershed Planning as shared governance is crucial to effective watershed planning and management.

3.2.5 Legal Framework for Water Conservation to Support Aquatic Ecosystem Protection

A legal framework for water conservation to support aquatic ecosystem protection should provide a level of predictability, certainty and protection to flows that are required to protect the aquatic ecosystem. Existing policy tools may feed into a proposed legal framework for this purpose, but a legal framework does not currently exist. The primary policy tools that do exist include:

- Water conservation objectives (WCO); and
- The Strategy of the Protection of the Aquatic Environment.

Associated policy instruments were identified and reviewed; both the WCO and the Strategy of the Protection of the Aquatic Environment were fully discussed, issue/gap implications were identified and potential options suggested. Indirect connection with other priorities include: pollution minimization, watershed governance, long term supply, watershed planning, and reliable quality water supply. Considerable discussion and review was undertaken in the prioritization assessment with the impact rating identified as moderate to high and the probability of success rated as low. The Project Team noted that in the southern part of the province and the oilsands development area, where the need to protect the aquatic environment is crucial, other provincial

policies have in effect "traded-off" protection of the aquatic environment to other relevant economic or social benefits. For example, in the south, the in-stream flow needs (IFN) to support a healthy aquatic environment are not being met in the approved water conservation objectives, except in the Red Deer Basin. In the Athabasca region, a similar emerging problem has arisen, whereby during heavy operations IFN will not be met unless licensees share their water allocations.

Therefore, the Project Team surmised that the impact of addressing this priority issue is high, but the probability of success is low due to political will and trade-offs that have already occurred and continue to occur. This issue was identified as potentially having a high probability of success over the longer term.

3.2.6 Perspectives, Strategies and Priorities for Long-term Water Supply

This priority identified aging infrastructure and the problems of maintaining high quality drinking water supply. If or when the emphasis shifts to watershed management or limiting growth, current policy instruments may not be broad or adaptable enough to cope effectively. No further assessment was made on this priority. The decision was made to include the elements of this issue area in reliable, quality water supply for a sustainable economy (surface/groundwater); this is a high priority that must be addressed as all Albertans require high quality drinking water supplies.

3.2.7 Watershed Planning

Water for Life clearly identifies watershed plans as a method of determining water management objectives and priorities both to sustain aquatic ecosystems and to support sustainable economic development. Both the Project Team and the SMEs identified the elements of *Watershed Planning* as a key policy issue for Alberta. The resulting question, "to what extent will watershed planning options be enabled or constrained by existing policy instruments" was used as the basis for an in-depth preliminary analysis, search of associated policy instruments, issue/gap implications, connection with other priorities and the development of potential options. Through the prioritization assessment process the nature of the issue was reviewed, core issue/gap elements identified and "impact" and "probability of success" ratings identified.

Watershed planning is difficult to do properly, as it needs to address many different factors. These include the complexity and uncertainty of water management, global pressures, climate change and cumulative impacts, existing investments in physical infrastructure, growth, and the ability of decision makers to interpret and respond to economic and social pressures without a formal and public planning process. Advantages and disadvantages of the constraints and flexibility of water management planning were reviewed. Issue/gap implications and potential options were then developed.

3.2.8 Market Mechanisms

Through preliminary analysis and the prioritization assessment process it was identified that there is already considerable work underway on water-based market mechanisms. Market instruments are tools to help meet policy objectives. The Project Team recognized that there may be a need for broader thinking about the role of market instruments in the overall water management system. Potential options were identified. The decision was made to exclude this issue focus area from the priority list with the exception that it would be noted as cross-cutting, and therefore important to all identified priorities.

3.2.9 Reliable, Quality Water Supply for a Sustainable Economy (surface/groundwater)

A sustainable economy depends on knowing the quality and quantity of water supplies. It is also based on the certainty that sufficient quantity is available to accommodate current economical activities and growth. The preliminary analysis and prioritization assessment process was based on the question: "should this outcome be to implement the tools and techniques necessary to ensure the economy has the reliable, quality water supplies for sustainability?" Examples of recent past and present practices of in-stream flow needs and allocations were identified and discussed. Associated policy instruments were noted, issue/gap implication questions developed, potential options developed and other conditions identified. Connections with other priorities were established.

3.2.10 Pollution Minimization and Source Water Protection

This issue raised an important question for analysis and assessment: How are water, air, and land use decisions linked by existing policy (to address pollution minimization and

source water protection)? The *Public Land Act* has some prohibitions that do not appear to be used, however it could be a tool used for watershed protection. Preliminary analysis identified significant correlation for protection between land and water use. A number of policy instruments were identified and the analysis clearly identified two clear gaps: responsive measures do not currently exist or are not transparent in terms of adapting to degradation in water quality; and the policy framework governing non-point source pollution is non-existent leaving vast acres of riparian landscape and aquatic habitat unprotected from these contaminants.

The prioritization assessment process identified an overarching gap of minimizing water pollution without appropriate institutions or policy instruments to manage all pollution sources. This issue included discussion of diverse topics, materials and information about both non-point source and non-point cumulative pollution, as well as how melting glaciers affect water supply; i.e. implications with recharge areas.

3.3 Findings and Results

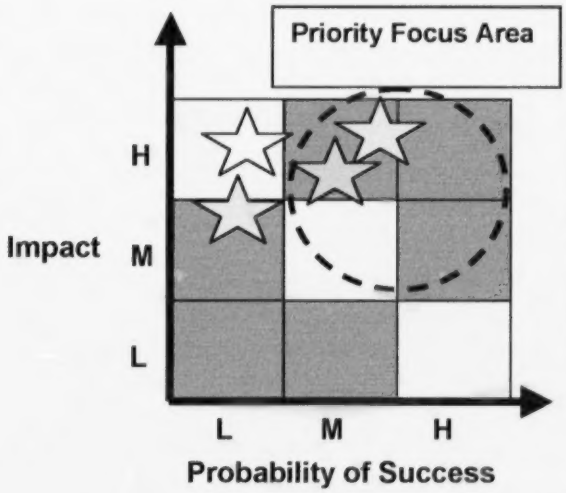
Project Team members performed a cursory analysis of the matrices and four priority issue focus areas emerged for further prioritization:

1. Watershed Planning (includes Watershed Governance, Integration of Air, Land and Water and Empowerment of Municipalities).
2. Reliable, quality water supply for a sustainable economy (includes Joint Management of Surface and Groundwater, and Perspectives, Strategies and Priorities for Long-term Water Supply).
3. Pollution minimization and source water protection.
4. Legal framework for water conservation and management to support aquatic ecosystem protection (includes Market Mechanisms and Economic Instruments).

The Project Team applied the ranking process at a meeting to determine if it would result in a finding that could be supported by all the members present. (The high priority items identified by the Team became the focus of a SME workshop at a later date where a more detailed assessment was undertaken by invited experts.)

Figure 3 highlights where each of the issues ranked on the priority assessment scale.

Figure 3. Ranking of Issues on the Priority Assessment Scale



Watershed Planning ** includes Watershed Governance, Integration of Air, Land and Water and Empowerment of Municipalities*
Reliable, quality water supply for a sustainable economy **includes Joint management of surface and groundwater and Perspectives, strategies and priorities for long-term water supply*
Pollution minimization and source water protection
Legal framework for water conservation and management to support aquatic ecosystem protection

* Market mechanisms and economic instruments were identified as cross-cutting issues relevant to all four identified priority areas.

3.4 Key Aspects of the High Rated Priority Issues

3.4.1 Integrated Water Management Planning

Water for Life identifies that Albertans should take a watershed approach to developing water management objectives in each watershed. A watershed also provides a geographical land mass for planning and integration/cumulative impact considerations.

In *Water for Life* a number of key outcomes were identified:

- Water management objectives and priorities for sustaining aquatic ecosystems are established through watershed plans.
- Water management objectives and priorities to support sustainable economic development are established through watershed plans.
- Communities are demonstrating leadership in watershed management.
- Identification of sub-elements to be considered, including watershed governance, integration of air, land and water, and empowerment of municipalities.

Issues/gaps and associated concerns were identified through this process:

- The *Water Act* provides that persons involved in water management planning may adopt an "integrated approach to planning water, land and other natural resources."
- There is no consistent, comprehensive system of integrating water management planning or watershed management planning as proposed in *Water for Life*.
- There is no shared governance system in place to support implementation of integrated water management plans.
- Limited/inconsistent consideration of integration aspects including lack of supporting infrastructure, limited degree of integration and limited knowledge and information to inform or assess.

If this priority focus area is addressed, the impact will be high because it strongly connects to the intent of *Water for Life*. The priority focus area identifies that much of the system elements are in place but that there is a need to develop systems for shared governance/implementation and monitoring of watershed planning and watershed governance. The impact would also occur in a range of other water/land/air management departments and sectors.

The probability of success ranking reflects current political will and legislated authority to use an integrated approach to water management planning. There is sufficient momentum at this time, but it will take additional time and significant resources to advance this initiative further in a timely manner in all impacted sectors. Therefore, the probability of success was ranked medium to high.

3.4.2 Reliable, Quality Supply for a Sustainable Economy

Water scarcity was identified as several major river basins are over-allocated, especially in southern Alberta. The Project Team also identified that the Athabasca River in the northern part of the province needs attention. Future water supply needs are emerging as a growing issue with a broadening public awareness and interest. This growing demand for water supply is challenging our knowledge base of available resources and long-term management options including overarching issues such as joint management of surface and groundwater and the perspectives, strategies and priorities for long-term water supply.

Issues/gaps and associated concerns reflect:

- Lack of clarity around what options could and should be considered to address water scarcity across sectors and uses, with an emphasis on efficient vs. effective water use.
- Lack of common processes/policies/principles to support decisions around water allocation.
- The present management model should move from a supply side model to a demand side model.
- Integrated risk assessment around future supply should be considered, including climate change implications.

If this priority focus area is addressed, the impact will be high but there is a limitation on water access in some areas along with a growing, not declining, need for water. There is a significant shift from water supply to water demand management and has increased from simply being an industry issue to a realization of multiple needs.

The probability of success of having this priority focus area addressed was moderate despite recent progress, due to the entrenched allocation system of first in time, first in right. There are already some regions dealing with issues such as water scarcity, transfers and technology. Identification of a growing interest in market-based instruments to address issues of water supply and quality was established. The political will to make major changes in how water resources are allocated to ensure most beneficial use will affect the probability of success. Offsite storage was also raised as an unresolved issue affecting this priority focus area.

3.5 Validation of Priority Focus Areas (SME Workshop)

The two top-ranked priority focus areas, which are a combination of several of the original 10 issues, were subjected to further analysis at a SME workshop. SMEs were selected and invited to participate to ensure breadth of knowledge of existing and emerging trends in provincial policy and legislation. SMEs were asked to choose between the two identified priority focus areas in which they wished to participate for further discussion and conversation:

- Integrated Water Management Planning
- Reliable, Quality Water Supply for a Sustainable Economy

The SME workshop session used a "four-conversation model" described below. No consensus was sought among participants, rather the conversation was focused on providing additional

information for consideration by the Project Team and all information was recorded for future reference.

1. "Outcomes" Conversation
Given the priority focus area chosen, SME's discussed the desired future state. Ideally, this is a statement of what the issue would look like if it were addressed successfully and resolved. The conversation included aspects of technical, organizational, and/or human perspectives necessary to achieve a future desired state. This conversation provided the group an opportunity to share their views of what the future would look like.

2. "Measures" Conversation
Given the desired or preferred end state or outcome, this conversation focused on indicators of success – the tangible measures used to indicate successful outcomes. Once the desired outcome(s) was identified, this step provided key performance measures that would indicate that the outcome(s) had been reached. This conversation identified anything observable and measurable. The best way to distinguish an outcome from a measure was "operability." Outcomes tend to be ideas, concepts, and intangibles whereas measures are concrete, observable and tangible.

3. "Current State" Conversation
This conversation identified what material, information, conditions, etc. characterize the current state of the issue. This discussion included resources, blocks and barriers, current thinking (policy, legislation, etc.), studies, and current practices. Current assets and liabilities (see Section 3.6), current perspectives, fears, issues, problems, etc. were raised. Participants had an opportunity to tell their stories. This was done within the context of a desired end-state or outcome.

4. "Focus to Take" Conversation
The final conversation focused on what actions must be taken to go from the current state to the desired future state. This conversation provided activities (tasks, plans, etc.) needed to move from the current to the future. Focus in this conversation was on what can and should be done to reach the desired future. This conversation identified what resources needed to be applied to effect necessary changes. Short, medium and long term objectives and strategies were identified. This conversation allowed for a discussion of trade-offs.

3.6 Key Outputs of SME Workshop

All the conversations regarding both priority focus areas confirmed that the Project Team was on the right track in identifying priority issues that need to be addressed to ensure policy integration for water

management in Alberta. There was some discussion regarding the ranking of other priority focus areas and disagreement that the remaining priority focus areas were ranked properly.

The SME workshop identified the following current liabilities and assets based on untested observations of the workshop participants. These reflect the SME perspective, and no consensus was sought among participants.

Liabilities

- WPACs not empowered, nor do they have authority or funding.
- Lack of resources/capacity to deal with quality/quantity issues.
- Capital for construction rather than maintenance and operation.
- "Public" definition difficulties – who are stakeholders and who are partners?
- Insufficient hard data and data sharing (e.g., on actual water use, on chemicals).
- Decisions made by rule of thumb, not on scientific basis.
- Treated wastewater return/net water use not credited.
- Few incentives to pursue Best Management Practices (BMPs).
- Innovation stifled in municipal planning based on outdated planning provisions in the *Municipal Government Act*.
- Insufficient direction to regulators/enforcers.
- Current approach doesn't recognize cumulative effects caused by diverse uses on each parcel of land that impacts water supply and quality.

Assets

- Enforcement is effective on some issues.
- Growing public awareness of water issues.
- Notwithstanding its disadvantages, the provincial policy of water allocation based on first in time first in right is adaptable between quality and quantity. It provides certainty to license holders and if all licensees are required to participate in watershed management planning, and implement the plans through shared governance it could result in community based water resource management.
- Agencies are learning to cooperate (e.g., Wabamun incident). The Departments of Fisheries and Oceans and Environment Canada work well with the Government of Alberta on water quality.
- *Fisheries Act* effective for point-source control. *Water Act* has tools available, though not all of these are used.

- Headwaters are largely protected (Parks Canada and Eastern Slopes).
- "Continuous improvement" principle is valuable.
- Quantity/quality being split between two Acts means options are available.
- WPAC approach under *Water for Life* is an asset, but needs to have a legislative framework rather than a government policy framework where no department in particular is in charge of making sure the work gets done.

The SME workshop identified the desired outcomes (desired future state) and the performance measures that could be applied to show necessary movement from the current state to that future desired state (Tables 2 and 3).

Table 2. Integrated Water Management Planning

Outcomes	Measures
Resolution of terminology and scale on "watershed".	▪ Framework to identify scales, roles, and responsibilities, thus aiding appropriate priority-setting.
WPACs' authority and empowerment should be resolved.	▪ Memorandum of Agreement, legislative change, or rule changes to recognize and empower WPACs and to clarify their powers. ▪ Funding of WPACs is diversified from mainly government/environment organizations to include more private funders. ▪ Plans are legislated or regulated in some manner. ▪ WPACs have representation from land interests/land expertise to make them better venues for integrated watershed management.
Adequate resources and tools exist for provincial agencies; adequate knowledge base exists for policy-making and evaluation.	▪ Consideration of water as a "good" in order to rationalize demand for water (including exemptions, a support system). Potential for exemptions or subsidies up to a certain level to allow for vital personal use. ▪ Value of water as a good being externally derived vs. internally market-driven – not resolved. ▪ Money for governance, planning, fish habitat, forest hydrology. ▪ Closing of the mapping and inventory gaps.
Use and inter-basin transfer outcomes.	▪ The limit or "wall" of human use is defined and is below the ecological limit (capping basins allows Water Act tools to kick in). ▪ Sub-basins/sub-watersheds and tributaries should likely have their own indicators.
Integration agenda for air, land, and water is completed.	▪ Legislation to allow holistic sustainable management (either air/land/water or triple bottom line). ▪ Reduce amount of discretion in the system – currently insufficient direction based on conservation or other issues (could be provided by government or WPACs).

Table 3. Reliable, Quality Water Supply for a Sustainable Economy

Outcome	Measure
A consensus on definitions and the resolution of conceptual issues.	▪ A Memorandum of Understanding on mutual understanding of definitions.
Clear measurement schemes for various factors.	▪ A measurement for restorative capacity. ▪ A target of x L/capita in water use. ▪ Value of water to provincial economy is calculated. ▪ Value of natural capital is calculated.
Alberta will have integrated development and understand the impact of one development on another. Planning of development should be integrated. All developments should be low-impact.	▪ Integration resulting in balanced decision-making and in collaboration and cooperation between sectors. ▪ Grants should come with expectations around conservation ▪ Source protection plans include the water source and protection for all water types. These should be place-based, restorative (polluter pays) and preventative. ▪ No part of a watershed is detrimentally impacted by development.
Education of water users on the impact of their water consumption/use and corresponding changes in behavior of water consumers.	▪ Realignment policies should exist to ensure supply is sustainable. ▪ Planning for sustainable development. ▪ The pace of development is tied to the water supply and does not outstrip it. ▪ Water is used for long-term economic sustainability (value choices are made). ▪ Reduction of demand. ▪ New water conservation technologies are developed in the province.
Improved understanding and application of the processes that enable conservation.	▪ System for water management in times of scarcity. ▪ Uniformity of legislation. ▪ Transparency, adaptability, predictability, and consistency, such that incoming business people might know with certainty the water quantity and quality of Alberta's water management regime.

4 Project Team Advice to the Alberta Water Council

The desired outcome of the Project Team's work hinged on being in a position to provide advice to the AWC about processes and approaches to addressing priority issues/gaps in Alberta's water management system.

The Project Team is prepared to provide the following advice to the AWC regarding two priority focus areas based on a review of the SME workshop conversations and their recommended focus to take.

4.1 Integrated Water Management Planning

Water for Life

- Complete the goals of *Water for Life* as soon as possible – the plan allows for completion in 2014 due to sequencing.

Ministerial "Champions"

- Every department affected by watershed management planning and integration of policies could benefit from the minister taking a champion's position on integration. No department can be exempt from participation. Departmental initiatives to integrate policies for land, water, and air management must be done on a formal level (e.g., legislation).

Shared Governance

- Stakeholders need a clear definition of "shared governance" and what it entails.
- Partners in watershed management planning should be encouraged to participate to the extent that they are enabled and resourced. Municipalities, charged with land-use planning for private lands, must be brought into the process.
- The Province needs to create an understanding of what the appropriate scale and priorities are for watershed management, as well as specific terms of reference for water management.

Consensus

- There should not be an expectation of 100% consensus on all watershed management issues. Reasonable planning decisions need to be attempted and implemented.

WPAC Roles, Responsibilities and Resources

- WPACs are created through policy and not legislation. They have no authority and no mechanisms to derive adequate

resources and funding. The membership on WPACs is largely volunteer-based, and WPACs may not have the right people at the table. WPACs need a clear definition of their role and responsibilities. The water management system must be adjusted to optimize their volunteer hours. Current business plans must be optimized and vetted both "bottom-up" and "top-down," including providing for adequate personnel and financial resources. WPAC resources must be appropriate if they are to take on greater responsibilities.

Appeal Process

- Creation of a common application and appeal process, so legislation and agency decisions can be appealed. There should be a one-window approach to the appeals process.

Public Participation

- The public must have a greater role in discussions between departments and must be consulted before land use or water use applications are approved. Cumulative effects need to be addressed as part of every resource use application.

4.2 Reliable, Quality Supply for a Sustainable Economy

Integration of agencies and of issues

- Evaluate the effectiveness of supply forecasting.
- Economic outcomes are consistently growth-oriented – should encourage economic development that reflects water availability in the long term.
- Better dialogue around the ownership of *Water for Life* within the government – this would enable more complete data collection and data sharing.
- Promote land use planning and looking at other tools (e.g., City of New York) for source protection.
- Evaluate available tools and reform policy in order to maximize implementation.
- Create way to insulate or buffer the planning system.
- Adapt to all issues in watershed – interlinking of quality and quantity. Adapt the system to reflect these links.
- Implementation strategy and follow-up need to be resourced appropriately.

Legislation and planning

- Appropriate resources - not only funding, but human resources.
- Analyze information/data gaps for demand-side management.
- Prioritization is a key step.

- Update policy and bylaws.
- Explore making some guidelines into standards; e.g., Canadian drinking water guidelines.
- Update and strengthen framework for source protection.
- Better information on who is accountable and responsible, e.g., Municipal Affairs is accountable for some legislation that impacts water.

Empirical work and sharing to fill data gaps

- Establish, evaluate, and audit performance measures.
- Identification of information gaps (groundwater particularly).
- Coordinated data collection and accessible data systems.
- Baseline of groundwater is insufficient. Create a quality backstop through well-testing.
- Water use reporting.
- Establish proper baselines.
- We lack performance measures. If they exist, they are not focused on sustainability.
- It is particularly important to create measurements and fill gaps related to demand-side management (scarcity-based management).

Engagement with the public and perceptions of economic priorities:

- Value mapping. The public needs to guide government decision-making through identifying social values to balance with the economy and the environment.
- Evaluate the effectiveness of public consultation and of collaborative models.
- How is "public interest" defined? Who dictates it and how do we arrive at it?
- Better information on who is responsible, e.g., Municipal Affairs is accountable for some legislation that impacts water. Note: Concepts of accountability and responsibility are interrelated but not interchangeable. This should probably be clarified.
- Water planning must recognize that development is not "bad," but encourage development of thought beyond our normal economic paradigms – think of the value of water and how to preserve it.

These reflect initial areas of potential focus. The process by which this advice was developed, referenced in section 3.6, is further articulated in Appendix C and offers a good starting point for advancing on this advice.

5 Conclusions

The Project Team has completed the work described in the Terms of Reference and has provided AWC with the deliverables required. A significant body of inventory, analysis and prioritization of policy and issue/gaps has been developed. This report provides highlights and summaries of the work done and the processes used in the Project Team's deliberations.

Water for Life outcomes were used as a framework for policy issues and gaps identification. A qualified consultant assisted in preliminary inventories and preliminary analysis of policy issues and gaps. The prioritization process used by the Project Team assisted by providing a systematic broad canvas to addressing particular issues raised by individuals, SMEs and sectors. Adoption of a sound yet simple prioritization process helped the Project Team manage and focus a seemingly unmanageable and lengthy list of identified policy focus areas and single issues.

The ranking system used to identify two policy focus areas were based on subjective determinations by Project Team members. However, these preliminary findings were tested through a SME workshop. The advice being provided to the AWC and the Province is based on the process and wealth of information gathered by Project Team members, the consultant and SMEs, but does not reflect consensus on every statement provided. At the same time, the process involved deliberation and discussions by key partners and decision-makers involved in the implementation of *Water for Life*.

The process was successful in identifying two policy priority focus areas that represent a starting point for enhancing Alberta's water management system. Both focus areas identified through this process are associated with planned and existing AWC initiatives and *Water for Life* implementation strategies. This fact confirms the strategic importance of the Project Team's findings, which is just a beginning for further work to support the alignment of policy, legislation and resources for water management in Alberta.

Appendix A: Terms of Reference and Membership

Terms of Reference

The Project Team was given the following tasks:

- Identify the existing water management system in Alberta
- Define a process for identifying policy and legislative issues in water management systems in Alberta
- Define criteria and a process for prioritizing identified policy and legislative issues in the water management system
- Identify policy and legislation issues in water management system
- Prioritize policy and legislation issues in water management system
- Recommend approaches (e.g., policy or legislative amendments, guidelines, codes of practice or procedures) to address priority policy and legislative issues

Project Team Members

Mark Brostrom, City of Edmonton/Alberta Urban Municipalities Association (AUMA)
Claude Chamberland, Shell Canada
Bob Demulder, Alberta Chamber of Resources
Susanne Forbrich, Environment Canada
Audrey Murray, Alberta Energy
Ted Nason, Alberta Sustainable Resource Development
Andy Ridge, Alberta Environment (project manager)
Judy Stewart, Watershed Planning Advisory Councils, Project Team Chair
Jason Unger, Environmental Law Centre
Jim Webber, Western Irrigation District
Les Wetter, Ducks Unlimited

Appendix B: Sample Issues and Gaps Analysis Matrix

POLICY ISSUE/GAP STATEMENT: The empowerment of municipalities to reduce the impact of development on watersheds needs to be examined.

Type of Issue/Gap: How

Focusing Question: How would lower impact development be implemented in an urban and rural municipal context using existing policy instruments?

Outcome: All outcomes

Preliminary Analysis	Associated Policy Instruments
The Water for Life Strategy supports an active partnership role for local government in leadership and planning. The Strategy is not clear on the role local communities can and are expected to play in water management. Generally, Albertans live, play and recreate in municipalities. Municipalities control the use and development of private lands within their jurisdiction, and therefore have an important role to play in assuring that our private land development activities adjacent to, or in proximity to water resources does not negatively impact those resources. Under section 60, they have the direction control and management of all watercourses and bodies of water within their jurisdiction, subject to other provincial laws. Municipalities have explicit bylaw making powers granted by the provincial government, primarily through the *Municipal Government Act*. The province has granted municipalities considerable power to pass bylaws, which can influence how people within their jurisdiction interact with the environment. The Municipal Development Plan in any municipality can contain environmental policies, which in turn may be incorporated as provisions in a Land Use Bylaw. Policies, such as those found within a Municipal Development Plan provide direction to a municipal administration and its employees. Provisions found in a Land Use Bylaw are enforceable against citizens in the courts, as are other municipal bylaws. Municipalities control the use and development of privately owned riparian lands within their jurisdictional boundaries *Under part 17 of the *Municipal Government Act*, there are a variety of policies, bylaws, and guidelines that a municipality can develop and utilize to prohibit, regulate and control the use and development of privately owned riparian lands including ▪ the provincial government's Land Use Policies ▪ restrictions on development and buildings on or in such lands ▪ development setbacks in the municipality's Land Use Bylaw ▪ direct control districts ▪ environmental and municipal reserve dedication during the subdivision approval process.	▪ *Municipal Government Act*, and regulations ▪ Section 60 of the *Municipal Government Act* ▪ Provincial Land Use Policies ▪ *Wetland management in the Settled Areas of Alberta-An Interim Policy* ▪ *Provincial Wetland Restoration/Compensation Guide* ▪ *Public Lands Act* and regulations ▪ *Land Titles Act* and regulations ▪ *Surveys Act* and regulations ▪ *Agricultural Operations Practices Act* and regulations ▪ *Public Utilities Act*, and EUB ▪ *Safety Codes Act* ▪ *Water Act* and regulations-see section 23 ▪ *Environmental Protection and Enhancement Act* and regulations ▪ Conservation easements ▪ Intermunicipal Development Plans ▪ Regional Service Commissions ▪ Municipal Development Plans ▪ Intermunicipal Development Plans ▪ Area Structure Plans ▪ Land Use Bylaw ▪ Municipal Environmental Policies such as escarpment protection policy, stormwater management policy, groundwater remediation policy, wetland policy ▪ Municipal bylaws, including nuisance bylaws, waste management bylaws, salt management policies, dust control bylaws, sedimentation and erosion control bylaws, Environmental reserve provisions ▪ Municipal reserve provisions ▪ Environmental reserve easement provisions ▪ Public Utility Lot provisions ▪ Cows and Fish Program ▪ Yellow Fish Road Program

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Part 17 of the *Municipal Government Act* provides for dedication of environment reserves, and the creation of environmental reserve easements. The environmental reserve provisions were not designed to protect riparian lands from development: they were designed to protect water resources from pollution, and to provide access to the beds and shores of provincial water resources such as ponds, rivers and wetlands. Other lands can be required as dedicated environmental reserves if they are "hazardous lands" that could cause harm to development, such as unstable lands or lands subject to flooding.

Questions have been raised about the adequacy of the requirement of environmental reserve dedication of a minimum of six-meters from the legal bank of a watercourse or body of water during the subdivision approval process. The courts have determined that the 6 metres is a minimum requirement and therefore, if a municipality can demonstrate that more than 6 metres is required to be dedicated from a parcel during subdivision to prevent pollution or provide access to the bed and shore, that dedication will likely be upheld by the courts.

Environmental reserves in riparian lands can act as "buffer strips" between the development and the water resource, and reduce the impact of development of private lands on provincial water resources by retaining sediments and slowing the rate of stormwater flow. However, a review of buffer strips in other jurisdictions indicates that a six metre buffer strip is not adequate to function as a stormwater control or pollution prevention infrastructure adjacent to receiving watercourses or bodies of water.

For management of riparian land to be effective, it must be based on a good understanding of how riparian lands function and change. For a river or stream, this means, among other things, taking into account the natural meandering or movement of the channel within its floodplain, Cumulative impacts of urbanization can also change the function of riparian lands within a municipality. If riparian lands are required to be dedicated to prevent pollution, they will be treated differently than those riparian lands that are required to provide public access.

Effective management of riparian land also requires that information is readily available on a timely basis to municipalities and other decision-making bodies. This can be accomplished by hiring qualified consultants or utilizing

POLICY ISSUE/GAP STATEMENT: The empowerment of municipalities to reduce the impact of development on watersheds needs to be examined. **Type of Issue/Gap:** How **Focusing Question:** How would lower impact development be implemented in an urban and rural municipal context using existing policy instruments? **Outcome:** All outcomes	
services such as the riparian health assessments offered through the Cows and Fish Program. It is unclear what role experts within the provincial government are expected to play in reviewing development applications in municipalities and whether that role is sufficient to contribute to the successful implementation of the Water for Life Strategy as it pertains to empowerment of municipalities for delivery. Concerns have also been expressed about managing land use and stormwater in the watershed upstream from a municipality. The policy instruments of the provincial government (e.g., approvals, economic instruments, enforcement, and regional systems) can be effective in lowering the impact of development, but municipalities can also take action by establishing regional partnerships that create a level playing field for developers while at the same time reducing impacts on the watershed. Municipalities can demonstrate intermunicipal co-operation by adopting Intermunicipal Development Plans that provide jointly developed policies for neighboring municipalities to address common issues, such as riparian land protection, or water resource protection.	

POLICY ISSUE/GAP STATEMENT: The empowerment of municipalities to reduce the impact of development on watersheds needs to be examined.

Type of Issue/Gap: How

Focusing Question: How would lower impact development be implemented in an urban and rural municipal context using existing policy instruments?

Outcome: All outcomes

Issue/Gap Implications		**Connections with Other Priorities**	
Issue for whom/by whom?	**To be solved by?**	**Direct**	**Indirect**
Provincial government Municipal governments WPACs WSGs	Provincial government Municipal governments	Watershed governance Watershed planning	▪ Pollution minimization and source water protection ▪ Interaction between land air and water Interaction between surface and groundwater Drinking water standards

POLICY ISSUE/GAP STATEMENT: The empowerment of municipalities to reduce the impact of development on watersheds needs to be examined.

Type of Issue/Gap: How

Focusing Question: How would lower impact development be implemented in an urban and rural municipal context using existing policy instruments?

Outcome: All outcomes

Potential Options	Other Considerations

▪ Examine both the policy instruments that define the rights and responsibilities of municipalities concerning protection and management of water resources and riparian lands and the opportunities for initiative, leadership, and management available to local authorities.
▪ Evaluate existing policy instruments to determine what encourages or discourages proactive measures from municipalities to reduce the impacts of development on water resources and riparian lands.
▪ Revise the Strategy, policy instruments, or their implementation to improve the contribution of municipalities to water management.
▪ Offer incentives or require municipalities to incorporate watershed management provisions into Municipal Development Plans and Land Use Bylaws.
▪ Require municipalities to assess watershed issues at the beginning of and throughout the development process.
▪ In terms of riparian land management,
  ▪ examine the benefits of current policy instruments including the use of voluntary and mandatory compliance
  ▪ determine the roles the provincial government, municipalities, and *others should play in ensuring that the Water for Life* Strategy succeeds in protecting riparian areas
  ▪ provide support and resources to ensure that riparian lands are managed effectively
  ▪ define what pollution and public access mean in terms of establishing riparian land buffer strips
  ▪ design and implement riparian land buffer strip requirements that are based on riparian functionality.
▪ Provide better information and knowledge about the responsibility, methodology and technology for management of riparian lands.
▪ Create or revise mechanisms such as model bylaws, policies, regulations, guidelines, standards, and cost-sharing/grants that incorporate watershed issues and provisions into municipal decision-making in a timely and effective manner.
	▪ WPACs can demonstrate leadership and encourage co-operation among municipalities to share leading edge policy development, or bylaws within a watershed
	▪ The province can develop requirements for dedication of riparian land "buffer strips" increased from the minimum of 6 metres that reflect the adequacy of such lands to function for their intended purposes
	▪ AUMA and AAMD&C should be encouraged to provide educational materials and information to their member municipalities about the responsibilities of municipal governments to protect and manage water resources from the impacts of development
	▪ If a Municipal Development Plan was required to be consistent with any watershed management plan for lands within a municipal jurisdiction, or if a municipality was required to adopt policies and strategies developed in watershed management plans, those directives from the province would encourage municipalities to participate as stakeholders in watershed management planning activities and to take ownership of such plans
	▪ The province could provide clear direction to municipalities concerning section 60 of the *Municipal Government Act* the extent of delegation of "direction, control and management of water resources"
	▪ The province could provide consistent definitions and terminology to assist municipalities in implementation of water resource protection and management, for example, water bodies vs. other bodies of water; intermittent vs. permanent wetlands
	▪ Naturally occurring, natural boundaries, legal bank vs. ordinary high water mark
	▪ The province could require that surveyors who establish the legal bank of a water body or watercourse be trained in biological sciences and utilize criteria based on ecosystems and functionality

Appendix C: Issue Assessment Process Model

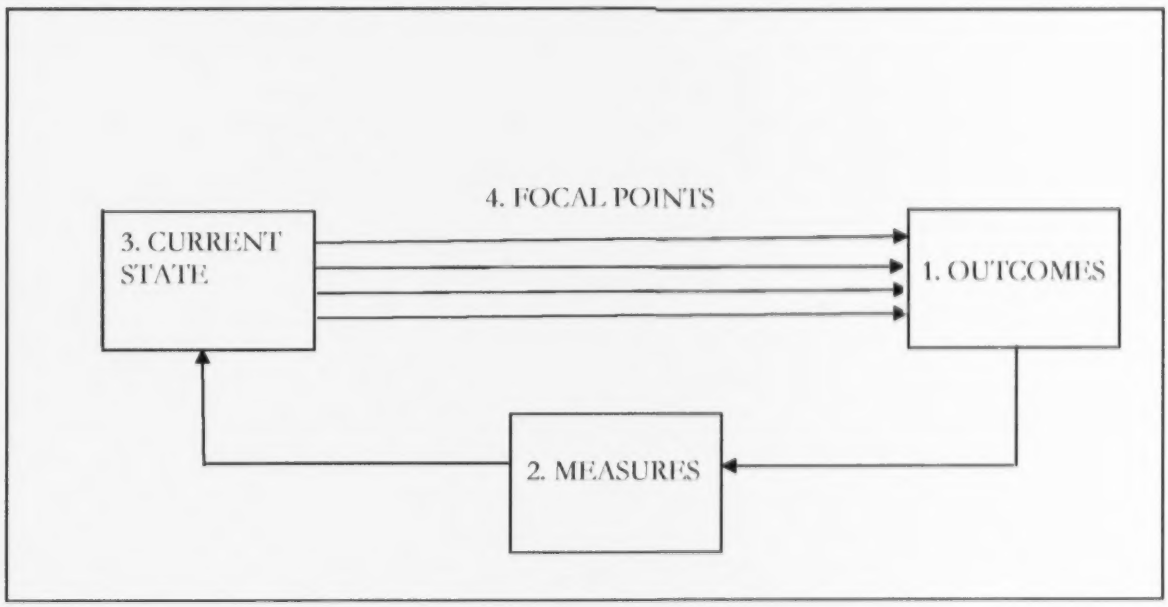
Orientation and Clarification

The Policy Issues and Gaps Project Team presented their work for consideration, which gave workshop participants an opportunity to ask questions to clarify their understanding of the issues and of what is expected. Two issues where presented.

a. Integrated Water Management Planning
b. Reliable, Quality Water Supply for a Sustainable Economy

Participants were asked to self-select into one of two issue groups and more specific instructions were given for resulting four conversations. The rest of the workshop was based on the following model:

Figure 4. Four-Conversations Model



1. Outcomes Conversation

Given the issue selected, this was a conversation about the desired future state- the elements of a preferred end state described by the participants. Ideally, this is a statement of what the issue would look like if it was addressed successfully and resolved. This conversation looks to the future desired end state and may be viewed from a Technical, Organizational, and/or Human perspective. This conversation is necessary because participants often come with solutions already in mind but from their own specific perspective and see a solution only from their own perspective and as a solution to the current situation as seen by them. This conversation gives the group an opportunity to share their views of what the future would look like. Otherwise the future looks only like a solution to today's problems not a desired joint-future all participants want.

2. Measures Conversation

Given the desired or preferred end state or outcome, this conversation focused on indicators of success - the tangible measures used to indicate successful outcomes. Once the desired outcome(s) is identified, this step provides key performance measures that would indicate that the outcome(s) had been reached. This conversation identifies anything that is observable and measurable. Often these first two conversations are mixed. The best way to distinguish an outcome from a measure is "operability." Outcomes tend to be ideas, concepts, and intangibles whereas measures are concrete, observable and tangible.

3. Current State Conversation

This conversation identifies what material, information; conditions, etc. characterize the current state of the issue. This may include resources, blocks and barriers, current thinking (policy, legislation, etc.), studies, current practices, etc. This conversation includes current assets and liabilities, current perspectives, fears, issues, problems, etc. This conversation gives participants an opportunity to tell their stories. This is now done within the context of a desired end-state or outcome. If participants begin with this conversation before the one on desired outcomes, there is greater difficulty for the organizers to identify a common outcome. There is no context in which to place the stories of the participants. Also, participants will tend to focus only on their own smaller piece of the whole picture and present solutions that solve a current situation rather than thinking ahead and more broadly.

4. Focus to Take Conversation

This final conversation focuses on what actions must be taken to go from the current state to the desired future state. This conversation provides activities (tasks, plans, etc.) needed to move from the current to the future. Focus in this conversation is on what can and should be done to reach the desired future. This conversation identifies what resources should be applied to. This conversation also identifies what needs to be done in the short, medium and long terms. This conversation also allows for a discussion of trade-offs.

Facilitation

In these types of single-day conversations, the role of the facilitator is critical. It is best that the facilitator has a good background in the content of the issue so they are able to know when ideas are duplicated and when new ideas are brought forward. Also, it is best if the facilitator knows the players, their backgrounds and their positions (to some extent). The style of facilitation is such that it simply focuses on ensuring full participation, that all the voices are heard and understood, and that there is balance in who speaks. Recording is done by the facilitator only to assist in key words and phrases to act as a reference point and group memory. It is best to have separate recorders focusing on more detail and capturing a richer representation of the discussions.

Presentations

The best way to present the results of the conversations is in the order of the four discussions. Whether done at the end of the workshop or later or the same or other audience, the four steps – outcomes, measures, current state, and focus – provide a logical story-structure. This step usually takes some analysis and grouping and re-wording of points but this can be done within the four the conversations.

Next Steps

This conversation model is a good first step to orient a group of stakeholders to the issues at hand and to help them present their own perspectives. As the group works towards more action steps, more Systems Thinking methods can be used. Specifically the development of systems diagrams that identify and link the major players or major elements of a system can be used by a group of stakeholders to identify appropriate leverage points and select a set of potential interventions that would reflect trade-offs among short, medium and long term results.